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A new genus and four new species of Deraeocorini (Insecta: Hemiptera: Miridae: Deraeocorinae) from New Zealand, with notes on other species

Alan C. Eyles

30 Mahana Rd, Paraparaumu Beach, New Zealand (alan.pat@xtra.co.nz)
Research Associate, Landcare Research, Auckland

ABSTRACT: The new genus *Poecilomiris* and four new species, *Poecilomiris longirostris*, *P. planus*, *Romna pallescens* and *R. rubisura*, are described and illustrated. Revised keys to the genera of Deraeocorini in New Zealand, and to 14 species of *Romna* Kirkaldy, 1906, are provided. Four genera and 18 species in the tribe Deraeocorini are now known from New Zealand.

KEYWORDS: Hemiptera; Miridae; Deraeocorinae; Deraeocorini; systematics; new taxa; keys; colour photos; eggs; economic importance.

Introduction

Since the revision of New Zealand Deraeocorinae (Eyles & Carvalho 1988), in which nine new species of *Romna* Kirkaldy, 1906 were described, and the subsequent description of *Romna tenera* by Eyles (1998), specimens representing a new genus and further new species of Deraeocorini have been collected.

This paper (1) describes and illustrates the new endemic genus *Poecilomiris* and its two endemic new species *P. longirostris* and *P. planus*; (2) describes and illustrates two further endemic new species of *Romna*, *R. pallescens* and *R. rubisura*; (3) provides a revised key to the genera of Deraeocorini in New Zealand, and to the species of *Romna*; and (4) adds additional information on six other species of Deraeocorini. Four genera and 18 species in the tribe Deraeocorini are now known from New Zealand.

Economic importance

As all Deraeocorinae are believed to be predacious (Schuh & Slater 1995), the New Zealand species must be regarded as beneficial insects. *Romna capsoides* (White, 1878) was recorded by Myers (1926) [as *Romna scotti* (White)] feeding on a caterpillar. *Deraeocoris maoricus* Woodward, 1950 possibly preys on larvae of the phorid fly *Megaselia* (*Aphiochaeta*) *impariseta* Bridarolli, 1937, and larvae of Coleoptera and Lepidoptera living in bumble bee colonies (Wheeler 2001). *Deraeocoris maoricus* occurs in pastures (Cumber 1959) and some fodder crops (Eyles 1960), and *Romna bicolor* Eyles & Carvalho, 1988 was collected on grass, but most of the other previously known Deraeocorini have been collected on endemic plants. *Romna scotti* (White, 1878) is the only other exception because, although it occurs mainly on endemic plants (Eyles 1998 and this paper), it has also been collected in an apple orchard and on grass (Eyles & Carvalho 1988). The occurrence of *R. scotti*, *D. maoricus* and other New Zealand Deraeocorini in pastures, orchards, crops, nurseries and home gardens should be studied, so that the economic significance of these beneficial insects can be established and, if possible, enhanced.

Systematics

Species of Deraeocorinae may be distinguished by using the key to the subfamilies of Miridae in New Zealand provided by Eyles & Schuh (2003). In the following descriptions, all measurements are in millimetres, those of females

within round brackets. Measurements are means of five specimens of each sex (or the number available if less than five). Exceptions are body length and width, for which ranges only are given. The terminology for female genitalia follows that of Davis (1955). The two-letter area codes (e.g., TO for the Taupo area) are those proposed by Crosby et al. (1976, 1998).

Abbreviations for repositories

CGNZ: Chris Green Collection, Henderson, Auckland, New Zealand.
CMNZ: Canterbury Museum, Christchurch, New Zealand.
FRNZ: New Zealand Forest Research Institute, Rotorua, New Zealand.
LUNZ: Lincoln University, Lincoln, New Zealand.
MONZ: Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand.
NZAC: New Zealand Arthropod Collection, Landcare Research, Auckland, New Zealand.
OMNZ: Otago Museum, Dunedin, New Zealand.
PANZ: National Plant Pest Reference Laboratory (formerly Plant Protection Centre), Auckland, New Zealand.

Key to the genera of Deraeocorini in New Zealand

1 Pronotum without lateral carinae; third antennal segment much longer than fourth segment (almost twice as long) ..... *Deraeocoris*

– Pronotum with lateral carinae (in some genera or species narrow or anteriorly only); third and fourth antennal segments equal or subequal in length (Figs 1, 4) 2

2 Head in lateral view flattish (and long) with frons and vertex below level of top of eyes (Fig. 9) ..... *Reuda*

– Head in lateral view not flattish (or as long); frons and vertex convex and above, or level with, top of eyes (Fig. 10) 3

3 Head porrect in females; anteocular length greater than length of head behind anterior margin of eye in females (Figs 1, 3); vertex in both sexes with a raised transverse oval (demarcated anteriorly with a depression) across base (Fig. 3) ..... *Poecilomiris* new genus

– Head declivous in both sexes; anteocular length less than length of head behind anterior margin of eye; vertex in both sexes without a raised transverse oval across base ..... *Romna*

***Poecilomiris* new genus**

(Figs 1–3, 10–20)

Species of small size (3.16–4.74 mm). Macropterous, elongate in males, oval in females; body rather flattened in females. Dorsal surface covered with semi-erect silvery curved setae, with flattened blade-like cross section. Second to fourth antennal segments with several long erect setae in addition to shorter recumbent setae. General colour piebald, with brown and stramineous areas (Figs 1–3).

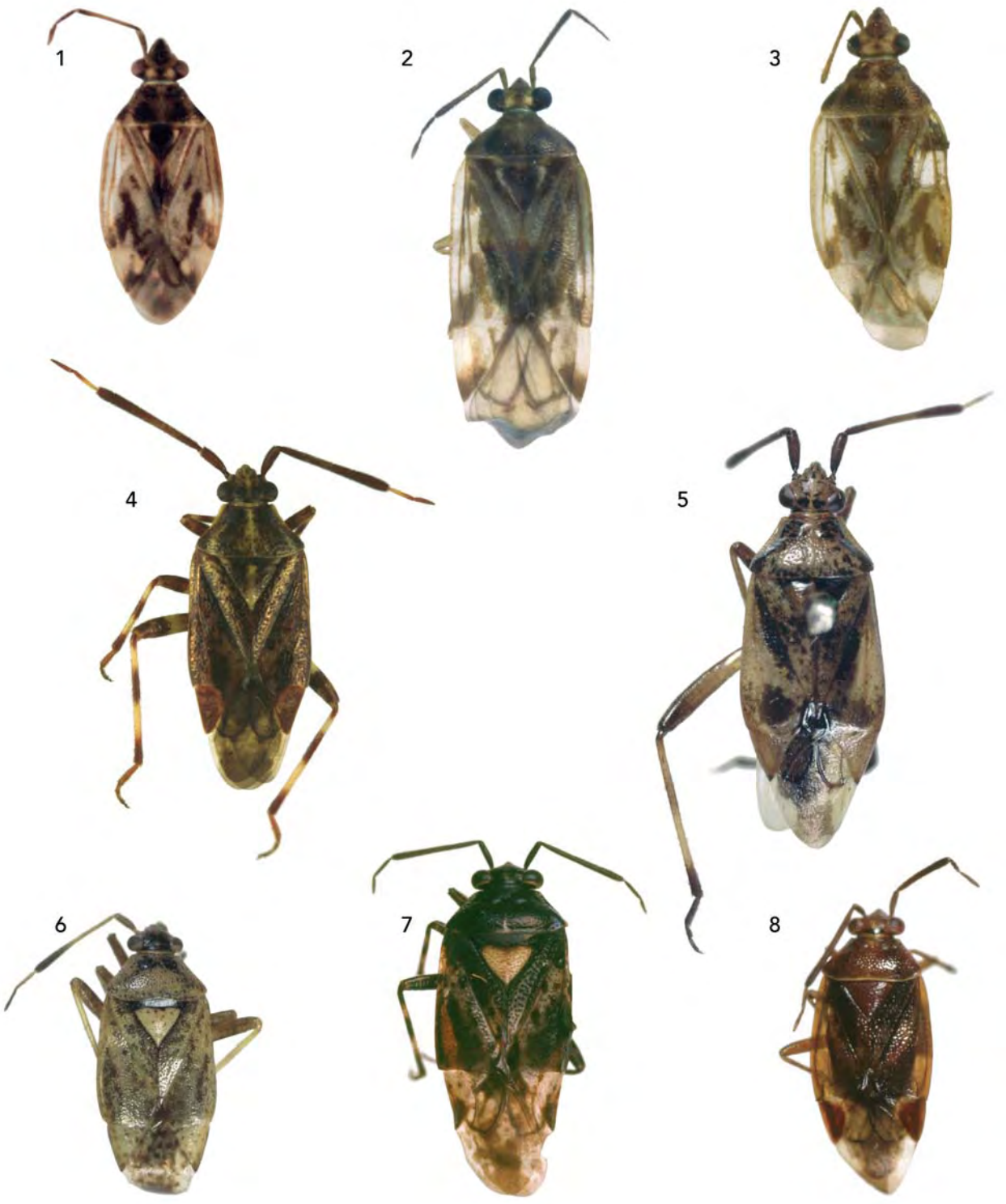
Head porrect in females, partly declivous and shorter in males. Vertex width 0.30 mm in males, 0.33–0.35 mm in females; carina absent. Vertex with a raised transverse oval (demarcated anteriorly with a depression) across base (Fig. 3). Frons and vertex convex, above level of top of eyes in females (Fig. 10), about level with top of eyes in males. Anteocular length greater than eye length. Length of antennal segments of males of type species 0.29 : 1.04 : 0.32 : 0.29. Labium reaching mid to hind coxae in one species, and well onto abdomen in another species; fourth segment tapering to a very fine point.

Pronotum with a robust collar demarcated by a deep furrow; calli prominent; densely punctate behind calli, with disc of posterior lobe convexly elevated in males only. Lateral carinae very narrow, tapering; lateral margins sinuate (straight in some specimens); anterior margin straight or gently concave; posterior margin convex (sometimes straight) in males, straight in females. Mesoscutum and scutellum smooth, shiny (scutellum often with transverse wrinkles at least basally); scutellum convexly elevated.

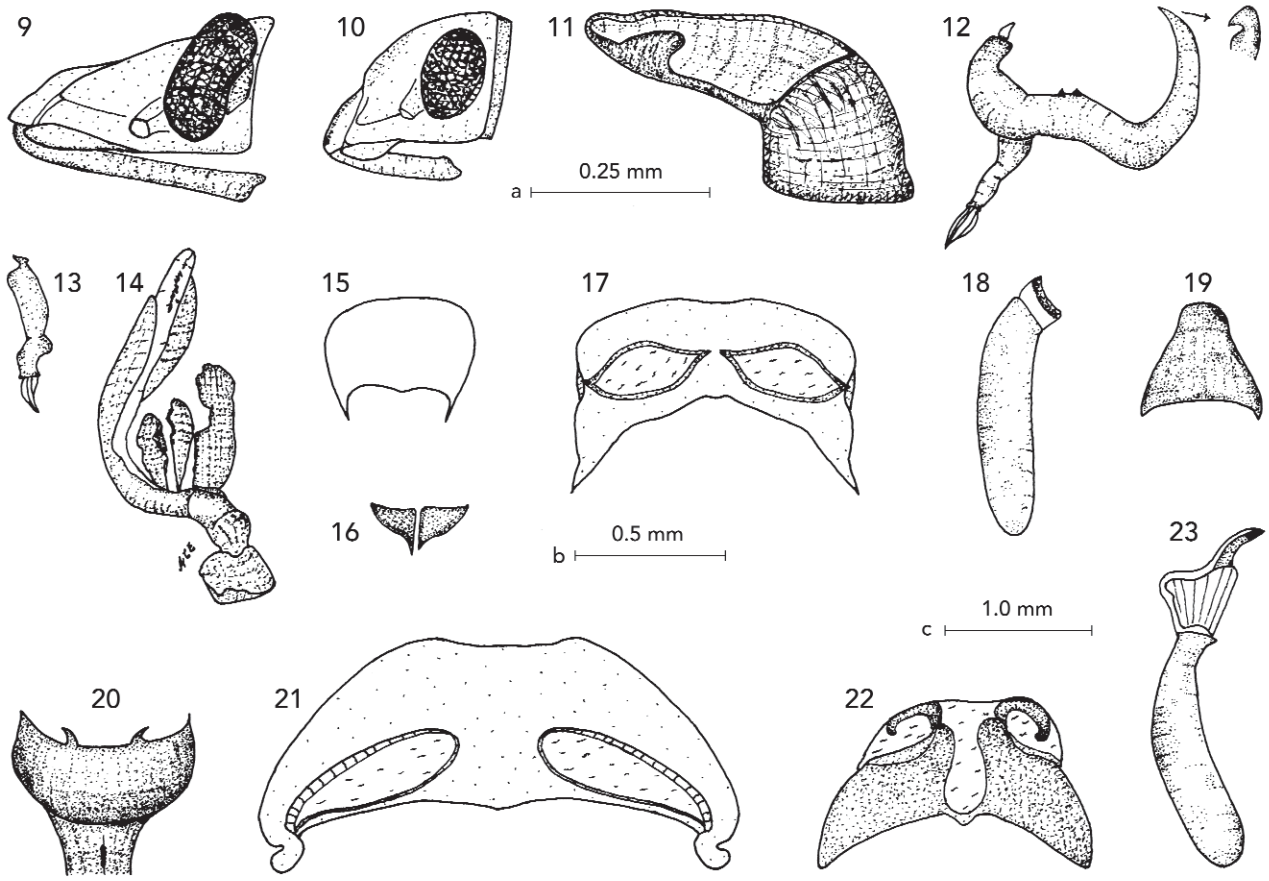
Hemelytra with width of embolium equal to (or about equal to) eye width in one species, and two-thirds eye width in the other species. Outer part of clavus (outside vein PCu + 1A) at a lower elevation than remainder of clavus. Clavus and corium punctate. Ostiolar peritreme with a prominent, elevated posterior lip; evaporating area straight across top (dorsal edge) close to apex of peritreme. Legs relatively short.

MALE GENITALIA: Left paramere (Fig. 12) shaped like a pair of cattle horns; basal lobe with two teeth; basal to basal lobe with a strong, curved extra projection (left horn) with a pale pointed apex; main shaft strongly curved, hooked at apex. Right paramere (Fig. 13) small, with a hooked apical process, and a small rounded bulge near base.

Phallotheca (Fig. 11) with a right-angled bend, and a rounded, inwardly turning plate-like extension on one edge



Figs 1–8 Dorsal views: 1, *Poecilomiris planus* paratype ♀ (Otapiri Stream); 2, *Poecilomiris planus* holotype ♂; 3, *Poecilomiris longirostris* paratype ♀; 4, *Romna rubisura* holotype ♂; 5, *Romna variegata* allotype ♀; 6, *Romna cuneata* allotype ♀; 7, *Romna albata* holotype ♂; 8, *Romna nigrovenosa* holotype ♂ (Figs 1–4 by Andrew Townsend; Figs 5–8 by Barry Eykel).



Figs 9–23 Heads, genitalia and eggs. 9, *Reuda mayri* ♂ (Shuteye Shack) head, lateral view; 10, *Poecilomiris planus* paratype ♀ (Aspiring Hut) head, lateral view. 11–14, male genitalia of *Poecilomiris planus* (Waikato/Waipakihi River Junction): 11, phallotheca; 12, left paramere; 13, right paramere; 14, vesica. 15–20, female genitalia of *Poecilomiris planus* (Dunsdale Stream): 15, seminal depository; 16, structures at anterior of ovipositor below ventral labiate plate; 17, ring sclerites and dorsal labiate plate; 18, egg; 19, inter-ramal sclerites, dorsal view; 20, ovipositor bulb, dorsal view. 21–23, *Romna capsoides* (Kaimanawa Rd) female genitalia: 21, ring sclerites and dorsal labiate plate; 22, inter-ramal sclerites, dorsal view; 23, egg. Scale a for Figs 11–14, 16–17, 19. Scale b for Figs 9, 10, 15, 18, 20–22. Scale c for Fig. 23.

near apex. Vesica (Fig. 14) with a long membranous lobe bearing a row of spines near apex, supported by a sclerotised canoe-shaped structure, and with a shorter flat plate-like sclerotised structure (on right side of figure). Between rises a short paired structure, each half flattened, sclerotised on inner edge in apical half (possibly rim of secondary gonopore).

FEMALE GENITALIA: Seminal depository as in Fig. 15. Ring sclerites (Fig. 17) somewhat lemon-shaped, almost touching. Area at anterior of ovipositor, below ventral labiate plate, with two heavily sclerotised, triangular, wing-like structures (Fig. 16). Inter-ramal sclerites (Fig. 19) simple, sclerotised, light brown. Ovipositor bulb (Fig. 20) with two thorn-like dorsal anterior extensions.

EGG: From dissection 0.87 x 0.20 mm; gently curved (Fig. 18); chorion smooth.

TYPE SPECIES: *Poecilomiris planus* n. sp.

DIAGNOSIS: *Poecilomiris* new genus is nearest to *Reuda* White, 1878 in head shape and a flat non-elevated hemelytra. It is distinguished from *Reuda* by the cattle horn-like shape of the left paramere (Fig. 12), absence of punctation on the scutellum, elevation of vertex and frons above eyes (compare Figs 9 and 10), and by the absence of colour banding on the legs.

ETYMOLOGY: The name *Poecilomiris* is derived from the Greek word *poikilos* = pied, with *miris* from the family name Miridae. It refers to the piebald colouring of the type species. Gender masculine.

***Poecilomiris planus* new species**

(Figs 1, 2, 10–20)

Length 3.89–4.74 (3.16–3.58); width 1.32–1.70 (1.43–1.62). Head: width 0.72 (0.71); length of face 0.62 (0.65); vertex width 0.30 (0.33). Antennae: length of segments 0.29 (0.28) : 1.04 (0.90) : 0.32 (0.30) : 0.29 (0.27). Labium: length 1.45 (1.50). Pronotum: length 0.71 (0.64); width at posterior 1.25 (1.10). Scutellum: length 0.58 (0.50); width 0.61 (0.50). Corium: length 1.83 (1.52). Cuneus: length 0.91 (0.61); width 0.48 (0.42).

COLOUR: Piebald, brown and pale (Figs 1, 2). Head yellow, with large brown area in middle of frons, continuing to apex of clypeus. Mandibular and maxillary plates, gena, and gula areas, usually brown. First two antennal segments stramineous (brown in some males); apex and base of second segment usually brown; third and fourth segments brown.

Pronotum yellow, with two large triangular spots on posterior lobe, and lateral margins, brown; calli usually brown. Groove behind collar, and a transverse line between calli, red in some females. Mesoscutum brown, with a sublateral yellow stripe. Scutellum dark brown, or black, with a lateral yellow dash in basal half.

Clavus mostly pale, with apical third brown. Embolium pale except at apex. Corium pale, with brown markings (as in Figs 1, 2). Cuneus pale, with brown spot at least apically, often also following apical margin. Membrane with veins surrounding cells brown.

Coxae and legs pale (dorsal, anterior and part posterior surfaces of femora in one male brown). Ventral surface of thoracic area brown. Ventral surface of abdomen brown in males (pale, with broad brown lateral stripe in females). The lateral stripe with reddish-orange tinge in one female (reddish-orange on extreme base of abdomen in another female).

STRUCTURE: Labium reaching to mid coxae or just onto hind coxae in females, and to hind coxae in males.

MALE AND FEMALE GENITALIA, AND EGG: As described for the genus (Figs 11–20).

NYMPH (fifth instar): Head brown, pronotum brown laterally and in anterior half. Wing pads piebald brown and pale. Abdomen red laterally and with red transverse stripes dorsally. Hind femora brown or red; hind tibiae with red band basally. Head, antennae and labium similar to adults. Labium reaching hind coxae. Abdomen with a single dorsal scent gland opening between segments 4 and 5, surrounded by a shield-shaped dark red area mostly on segment 4. Pronotum with lateral margins concave. Hind legs with long erect setae on tibiae and tarsi. Female nymphs with flattened body; shorter than male nymphs.

Measurements from a single male nymph (stored in alcohol): length 3.16 (female 2.59); width 1.25. Head: width 0.66; length 0.60; vertex width 0.32. Antennae: length of segments 0.24 : 0.70 : 0.24 : 0.30. Labium: length 1.30. Pronotum: length 0.40; width at posterior 0.78. Wing pad: length (from pronotum) 1.34.

NYMPH (fourth instar): Colour and structure as for fifth instar. Measurements from a single nymph (stored in alcohol): length 2.17; width 0.84. Head: width 0.54; length 0.48; vertex width 0.29. Antennae: length of segments 0.20 : 0.43 : 0.20 : 0.25. Labium: length 1.10. Pronotum: length 0.30; width at posterior 0.61. Wing pad: length (from pronotum) 0.47.

NYMPH (third instar): Colour and structure as for fifth instar. Measurements from a single nymph (stored in alcohol): length 1.70; width 0.65. Head: width 0.47; length 0.40; vertex width 0.24. Antennae: length of segments 0.10 : 0.30 : ? : ? [missing]. Labium: length 0.95. Pronotum: length 0.20; width at posterior 0.49. Wing pad: length (from pronotum) 0.25.

TYPE DATA: **Holotype** ♂ (4.17 x 1.70 mm), **TO**, Kaimanawa North Forest Park, sweeping *Nothofagus* spp., 20 Feb 1979, J.S. Dugdale (NZAC). **Allotype** ♀ **RI**, Mataroa, nr Taihape, ex *O*[*learia*] *gardneri*, 26 Jan 1999, B.H. Patrick & C. Ogle (OMNZ). **Paratypes** (13♂ 22♀; CMNZ, FRNZ, LUNZ, MONZ, NZAC, OMNZ, PANZ): 1♀ same data as allotype; 1♂ **TO**, Waikato/Waipakihi River junction, 914 m, on *Nothofagus*, 19 Feb 1979, J.S. Dugdale; 1♂ **NN**, Cobb River, 22 Feb 1993, M.-C. Larivière; 1♂ **MC**, Banks Peninsula, Kaituna Valley Reserve, on kahikatea, 27 Jan 2001, A.C. Eyles; 1♀ **OL**, Mt Aspiring National Park, Aspiring Hut, 430 m, beating vegetation, 31 Jan 1987, J.B. Waller; 3♂ Matukituki River flats, 300 m, 11 Feb 1997, B. & H. Patrick; 1♂ 2♀ **SL**, Harris Rd Bush, *Coprosma propinqua*, Jan–Mar 2003, C. Rufaut; 1♀ same data except *Coprosma rotundifolia*; 1♂ 5♀ Otapiri Stream, *Coprosma rotundifolia*, Jan–Mar 2003, C. Rufaut; 1♂ 1♀ Dunsdale Picnic Area, 46°08'07" S, 168°36' E, beating in large clearing near podocarp/broad-leaf forest, 18 Jan 1999, L. LeSage; 2♂ 6♀ Hokonui State Forest, Falls Flat Track, Dunstan Stream, 46°08' S, 168°36' E, 100 m, on small-leaved *Coprosma* (in large clearing near podocarp/broadleaf forest), 18 Jan 1999,

Larivière & Larochelle; 2♂ 5♀ Forest Hill Scenic Reserve, Tussock Creek Picnic Area, 46°14'20" S, 168°26'07" E, 150 m, beating *Coprosma propinqua* dead branches with lichens (in large clearing near podocarp/broadleaf forest), 20 Jan 1999, Larivière & Larochelle.

OTHER MATERIAL EXAMINED: 8 nymphs [collected with adults] (NZAC): 4 fifth instar, 3 fourth instar, 1 third instar **SL**, Otapiri Stream, *Coprosma rotundifolia*, Jan–Mar 2003, C. Rufaut.

DIAGNOSIS: *Poecilomiris planus* n. sp. is distinguished from *P. longirostris* n. sp. by the shorter labium, which reaches to mid coxae or just onto hind coxae in females, and to hind coxae in males.

ETYMOLOGY: The epithet *planus* refers to the flat, non-elevated hemelytra in both sexes, and the non-elevated pronotum and rather flat body in females.

DISTRIBUTION: Taupo, Rangitikei, Nelson, mid-Canterbury, Otago Lakes and Southland areas.

BIOLOGY: This species has been collected in numbers on *Coprosma rotundifolia* A. Cunn. (Rubiaceae). It has also been collected on *Coprosma propinqua* A. Cunn., *Nothofagus* Blume (Fagaceae), *Olearia gardneri* Heads (Asteraceae), and kahikatea, *Dacrycarpus dacrydioides* (A. Rich.) de Laub. (Podocarpaceae).

REMARKS: The specimens collected by C. Rufaut, and referred to as 'Deraeocorid n. sp.' in Walker et al. (2004), belong to the species *Poecilomiris planus*.

***Poecilomiris longirostris* new species**

(Fig. 4)

FEMALE: Length 3.54–3.84; width 1.64–1.65. Head: width 0.75; length of face 0.70; vertex width 0.35. Antennae: length of segments 0.34 : 0.90 : 0.28 : 0.24. Labium: length 1.90. Pronotum: length 0.76; width at posterior 1.33. Scutellum: length 0.52; width 0.63. Corium: length 1.84. Cuneus: length 0.68; width 0.43.

COLOUR: Similar to that in *P. planus* (Fig. 3).

STRUCTURE: Labium in females reaching onto abdominal segment four.

TYPE DATA: **Holotype** ♀ (3.54 x 1.64 mm), **CL**, The Alderman Is, Ruamahuaiti I, *Metrosideros* sp. [rata], 8–12 Nov 1972, G.W. Ramsay (NZAC). **Paratype**: 1♀ same data as holotype (NZAC).

DIAGNOSIS: *Poecilomiris longirostris* n. sp. is easily distinguished from *P. planus* n. sp. by the much longer labium, which extends well beyond hind coxae onto abdominal segment four.

ETYMOLOGY: The epithet *longirostris* refers to the very long labium of this species.

DISTRIBUTION: Known from the Alderman Islands only.

BIOLOGY: Collected from an unidentified species of rata, *Metrosideros* sp. Banks & Gaertn. (Myrtaceae).

***Reuda* White, 1878**

(Fig. 9)

Reuda White, 1878: 132. Type species: *Reuda mayri* White, 1878 (designated by Carvalho, 1952).

***Reuda mayri* White, 1878**

(Fig. 9)

Reuda mayrii White, 1878: 132.

Reuda mayri: Carvalho, 1952: 53 (emendation).

MATERIAL EXAMINED: 18 specimens (CGNZ, MONZ, NZAC): 1♀ **ND**, Fern Flat, about 15 km S of Taipa, on rimu, 10 Dec 1999, A.C. Eyles; 1♂ **TO**, Kaimanawa Range, Urchin Track, 25 Mar 1984, C.J. Green; 5♂ **WI**, Pohangina, Pakohu Reserve, on rata, Dec 1994, H.A. McWilliam; 3♂ same data except Jan 1995; 2♂ same data, but on totara Dec 1994; 3♂ Bushy Park, rata, Jan 1995 H.A. McWilliam; 1♂ **RI**, Ruahine Range, Shuteye Shack, 1036 m, malaise trap, 7 Feb 1980, C.F. Butcher; 1♀ Shuteye Camp, 950 m, ex bark at night, 5 Feb 1980, C.F. Butcher; 1♀ **NN**, Brightwater, ex *Sophora microphylla*, 30 Dec 1972, G. Kuschel (R.A. Cumber Collection).

BIOLOGY: Previously known from under stones, moss from rock faces, sooty mould on *Nothofagus*, and attracted to light (Eyles & Carvalho 1988). The recent arboreal canopy trapping study by McWilliam & Death (1998) provided specimens of *R. mayri* from the following trees, which are now recorded in this paper as new host plant records: northern rata, *Metrosideros robusta* A. Cunn. (Myrtaceae), and totara, *Podocarpus totara* G. Benn. ex D. Don (Podocarpaceae). Single specimens were taken by other collectors on kowhai, *Sophora microphylla* Aiton (Fabaceae), and rimu, *Dacrydium cupressinum* Lamb. (Podocarpaceae), which most probably represent new host plant records for this predacious species, and the specimen collected on bark at night provides new additional information.

DISTRIBUTION: The specimens from Wanganui, Rangitikei, and Northland (other than Poor Knights Islands) provide new distributional records (see Larivière & Larochelle 2004).

***Romna* Kirkaldy, 1906**

(Figs 4–8, 21–42)

Romna Kirkaldy, 1906: 141. New name for *Morna* White, 1878, not *Morna* Stål, 1867. Type species *Morna capsoides* White, 1878.

There are now 14 species known in this genus.

Key to the species of *Romna*

This key should be used in conjunction with photos in Eyles & Carvalho (1988) and Eyles (1998).

1 Species of large size, over 6 mm long 2
– Species of small size, less than 6 mm long 8

2 Vertex narrow, 0.5 mm or less; a species of delicate facies ..... *tenera*
– Vertex wide, usually over 0.6 mm (except males of *cuneata*, 0.55 mm, and *pallescens* n. sp., 0.58 mm); species of robust facies 3

3 Hemelytra unicolour (brown or pale stramineous) 4
– Hemelytra not unicolour 6

4 Lateral carinae of pronotum not well developed, brown; cuneus brown; size 6.1–6.6 mm x 2.45–2.90 mm ..... *uniformis*
– Lateral carinae of pronotum well developed, pale; cuneus red, light brown or pale; size 6.94–8.60 mm x 3.1–4.4 mm 5

5 Hemelytra unicolour brown; cuneus red (sometimes light brown); apices of tibiae reddish ..... *capsoides*
– Hemelytra unicolour pale stramineous; cuneus pale; apices of tibiae stramineous ..... *pallescens* new species

6 Scutellum white; cuneus white speckled with brown; lateral carinae of pronotum not prominent, present only at anterior; body oval (Fig. 6) ..... *cuneata*
– Scutellum not white; cuneus brown, fawn, or orange, without speckles; lateral carinae of pronotum prominent throughout; body elongate 7

7 Pronotum with four longitudinal brown stripes (Fig. 4); dorsal surface (head to hemelytra) shiny, but not highly polished; length of third antennal segment 0.65–0.80 mm ..... *rubisura* new species
– Pronotum without four longitudinal brown stripes (Fig. 5); dorsal surface (head to hemelytra) highly polished; length of third antennal segment more than 0.80 mm ..... *variegata*

8 Eyes removed from anterolateral angles of pronotum by a distance equal to thickness of base of second antennal segment; body elongate; sides of pronotum distinctly concave ..... *oculata*
– Eyes touching anterolateral angles of pronotum; body oval or elongate oval; sides of pronotum convex, straight, or only slightly concave 9

9 Pale throughout with brown spots ..... *pallida*
– Not pale throughout, and without brown spots (except sometimes on membrane) 10

10 Head shape as in Figs 7 and 8, with apex of clypeus narrower (about half as wide as first antennal segment) and more pointed 11
– Head shape as in Figs 4 and 6, with apex of clypeus wider (about as wide as first antennal segment) and more rounded 12

11 Cuneus red; scutellum reddish-brown; pronotum without a mid-longitudinal pale streak basally (Fig. 8) or with a full mid-longitudinal pale streak (usually obscure in males) ..... *nigrovenosa*
– Cuneus with a large white spot in basal half; scutellum white throughout, or with pale spots, or with apical pale spot only; pronotum with a mid-longitudinal pale streak basally only (Fig. 7) ..... *albata*

12 Second antennal segment 2.0 mm long; labium reaching hind coxae ..... *bicolor*
– Second antennal segment 1.00–1.25 mm long; labium reaching mid coxae 13

13 Dorsal surface with alternate pale and dark brown longitudinal/diagonal stripes (pale areas with orange tinge); tibia dark only at apex ..... *ornata*
– Dorsal surface brown with variable amount of greyish-white mottling; tibia usually with three brown bands ..... *scotti*

***Romna capsoides* (White, 1878)**

(Figs 21–23)

Morna capsoides White, 1878: 131.

Romna capsoides (White): Kirkaldy, 1906: 141.

FEMALE GENITALIA: Ring sclerites (Fig. 21) elongate oval, oriented very slightly diagonally (almost transversely); anterior margin elevated considerably above dorsal labiate plate, and vertically convex. At anterior of ovipositor, below ventral labiate plate, with two heavily sclerotised claw-like structures. Inter-ramal sclerites (Fig. 22) with a brown sclerotised area on each side, linked mid-posteriorly by a curved strap-like structure (sigmoid process). Ovipositor

bulb anterior with two sharply pointed dorsal projections (longer than those in *R. rubisura* n. sp.).

EGG: 2.06–2.46 x 0.42–0.62 mm (from dissection), curved, narrowed behind operculum area; operculum sinuate across top; with a prominent curved spur (Fig. 23).

MATERIAL EXAMINED: 1♀ **TO**, Kaimanawa Rd, on red beech with old flowers [*Nothofagus fusca* (Hook. f.) Oerst. (Fagaceae)], 8 Jan 2000, A.C. Eyles (MONZ).

***Romna oculata* Eyles & Carvalho, 1988**

Romna oculata Eyles & Carvalho, 1988: 72.

MATERIAL EXAMINED: 1♂: **MC**, Christchurch, Summit Rd, Port Hills, on *Carmichaelia*, 1 Dec 1998, A.C. Eyles (CMNZ).

BIOLOGY: *Carmichaelia* R. Br. (Fabaceae) is the first plant that this species has been recorded from, and so should be regarded as a probable host plant.

***Romna ornata* Eyles & Carvalho, 1988**

Romna ornata Eyles & Carvalho, 1988: 74.

MATERIAL EXAMINED: 4 specimens: 1 paratype ♂ **CL**, Mt Moehau, flying midday at top of Little Moehau peak, 884 m, 22 Mar 1958, K.A.J. Wise (NZAC); 1♂ 1♀ **WO**, Yardleys Bush, on kahikatea, 11 Nov 2000, (Ent. Soc. Field trip), A.C. Eyles (MONZ); 1♂ **WN**, Levin, Hokio Stream Bush, beaten from kahikatea, 11 Feb 1989, E. Cooksley & J.I. Townsend (OMNZ).

DISTRIBUTION: Northland, Auckland and Coromandel Peninsula (Eyles & Carvalho 1988), as well as Waikato and Wellington areas.

BIOLOGY: Previously collected from rimu only. Collections from kahikatea represent a new host plant record.

***Romna pallescens* new species**

(Figs 24–30)

Length 6.94–7.29 (7.39); width 3.10–3.30 (3.53). Head: width 1.33 (1.44); length of face 1.17 (1.33); vertex width 0.58 (0.64). Antennae: length of segments 0.80 (0.80) : 2.50 (2.40) : 0.72 (0.77) : 0.61 (0.58). Labium: length 2.49 (2.70). Pronotum: length 1.44 (1.55); width at posterior 2.66 (2.83). Scutellum: length 1.10 (1.26); width 1.30 (1.40). Corium: length 3.29 (3.43). Cuneus: length 1.42 (1.46); width 0.72 (0.80).

COLOUR: More or less uniformly pale stramineous, including antennae, legs and ventral surface. Head with a brown transverse bar each side of mid-longitudinal line near base, and two small triangular spots in front. Fourth antennal segment, and third segment apically, pale orange. Apical half of fourth labial segment brown. Clavus, corium and membrane usually with small brown spots. Posterior surface of hind femora with some light brown before apex; tibiae often with a small brown spot at base; third tarsomeres light brown apically in up to apical half. Ventral surface of abdomen with a sublateral row of black spots.

STRUCTURE: Pronotal lateral carinae tapering to posterior. Posterior margin of pronotum with a deep sinuation in middle. In lateral view, corium and clavus flat; scutellum scarcely elevated.

MALE GENITALIA: Left paramere (Fig. 24) with a prominent triangular basal lobe bearing setae, and a 'step' on outer edge opposite middle of basal lobe; shaft curved to a sharp hooked apex (apex same shape from reverse side); paramere foot-like when rotated down so that basal lobe becomes the 'heel'. Right paramere with a sharp beak-like apex (Fig. 25); appearance of paramere changes as turned (Figs 26, 27); viewed from above (Fig. 28) with a rounded turned-over tip. Phallotheca as in Fig. 29. Vesica (Fig. 30) with three membranous lobes.

NYMPH (fifth instar): Pale like adults, but with apices of first and second antennal segments orange. Measurements from a single nymph: length 4.70; width 2.88. Head: width 1.34; length of face 1.01; vertex width 0.67. Antennae: length of segments 0.70 : 2.00 : 0.60 : 0.57. Labium: length 2.10. Pronotum: length 1.00; width at posterior 1.90. Wing pad: length (from pronotum) 2.27.

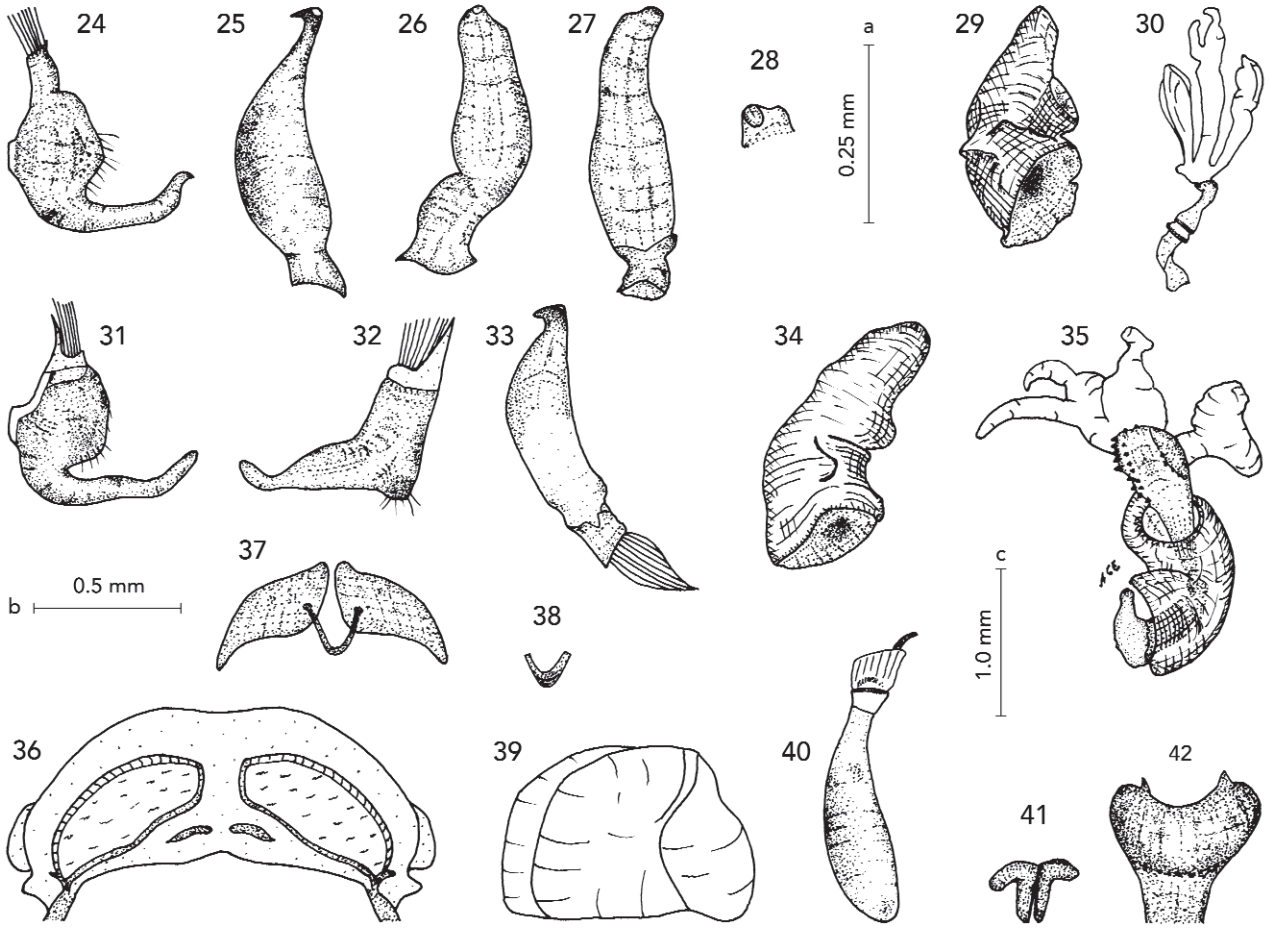
TYPE DATA: **Holotype** ♂ (7.13 x 3.20 mm) and **allotype** ♀ **MC**, Banks Peninsula, Kaituna Valley Scenic Reserve, on *Hoheria angustifolia* in flower (taken as fifth instar nymph and reared to adult), 27 Jan 2001, A.C. Eyles (NZAC). **Paratypes** (5♂, 4 fifth instar nymphs; CMNZ, MONZ, NZAC); 2♂ same data as holotype; 3♂ same data except collected as adults; 4 nymphs same data except not reared through.

DIAGNOSIS: *Romna pallescens* is similar in size and general form to *R. capsoides*, but is easily distinguished from it by the pale colour, and by the lower elevation of corium, clavus and scutellum.

ETYMOLOGY: The epithet *pallescens* refers to the overall pale colour of this species.

DISTRIBUTION: Known from Banks Peninsula only.

BIOLOGY: Breeds on narrow-leaved lacebark, *Hoheria angustifolia* Raoul (Malvaceae).



Figs 24–42 Genitalia of *Romna* species. 24–30, male genitalia of *Romna pallescens* paratype: 24, left paramere; 25, 26, 27, three views of right paramere from different angles; 28, apex of right paramere viewed from above; 29, phallotheca; 30, vesica (not fully inflated). 31–42, *Romna rubisura* paratypes: 31–35, male genitalia: 31, left paramere; 32, left paramere from reverse side after basal lobe rotated down to 'heel' position; 33, right paramere; 34, phallotheca; 35, vesica and phallotheca. 36–42, female genitalia: 36, ring sclerites and dorsal labiate plate; 37, inter-ramal sclerites and sigmoid process, dorsal view; 38, sigmoid process, posterior (slightly dorsal) view; 39, seminal depository; 40, egg; 41, claw-like structures at anterior of ovipositor below ventral labiate plate, dorsal view; 42, ovipositor bulb, dorsal view. Scale a for Figs 25–28, 33, 41. Scale b for Figs 24, 29–32, 34–39, 42. Scale c for Fig. 40.

***Romna rubisura* new species**

(Figs 4, 31–42)

Length 6.70–7.46 (6.95–7.47); width 2.85–3.16 (3.10–3.32). Head: width 1.40 (1.45); length of face 1.18 (1.26); vertex width 0.62 (0.67). Antennae: length of segments 0.80 (0.81) : 2.77 (2.75) : 0.69 (0.72) : 0.62 (0.63). Labium: length 2.75 (2.78). Pronotum: length 1.46 (1.49); width at posterior 2.58 (2.71). Scutellum: length 1.09 (1.14); width 1.34 (1.38). Corium: length 3.20 (3.28). Cuneus: length 1.31 (1.34); width 0.69 (0.74).

COLOUR: Brown, with banded legs. Head yellow, with two large dark brown spots on vertex, and a brown line following inner margins of eyes to antennal insertions. Clypeus with two longitudinal brown lines. Bucculae with an orange to brown line basally (red in some females); side of head with a longitudinal brown or orange line under eye from base to about posterior of maxillary plate. First antennal segment orange; second segment orange or red at base, yellowish on narrow part, and red (occasionally orange) in swollen apical half; third segment yellow in about basal half (Fig. 4), red (sometimes orange) in apical half; fourth segment red (sometimes orange).

Pronotum with four longitudinal brown stripes on a yellow background; mid-longitudinal line yellow; collar

and lateral carinae mainly yellow. Mesoscutum dark brown, with lateral margins yellow. Scutellum brown, with a mid-longitudinal yellow stripe (and apical third to half yellow in females).

Clavus mainly yellow in basal third; remainder brown on inner half, mainly yellow on outer half. Corium with (on a stramineous background): a brown stripe following claval suture; a brown stripe along medial fracture linking to an elongate brown spot in middle at level of inner angle; and a brown stripe following embolium in apical half. Some females with larger stramineous areas. Cuneus orange, with a variable-sized yellow (sometimes greyish) spot or marking at base, sometimes also following apical margin. Basal half of membrane, and veins surrounding cells, black or dark brown; apical half light brown.

Coxae yellow in apical half, brown or orange in basal half. Trochanters yellow. Femora red or brown, with two yellow bands in apical half. Tibiae yellow, with three red bands (Fig. 4). First tarsomere orange; second and third tarsomeres orange or brown. Ventral surface of thoracic area brown, orange and yellow. Ventral surface of abdomen yellow, with two sublateral brown stripes on each side, and a mid-ventral longitudinal brown stripe. Pygophore mainly orange.

STRUCTURE: Labium reaching mid coxae. Pygophore with a prominent rounded projection on left side, in addition to a long narrow central projection.

MALE GENITALIA: Left paramere (Fig. 31) with a prominent basal lobe bearing a few setae; shaft curved to a rounded apex; foot-like when basal lobe rotated down to heel position (Fig. 32, viewed from reverse side). Right paramere with hooked apex (Fig. 33). Phallotheca as in Fig. 34. Vesica (Fig. 35) with prominent membranous lobes, those on the trilobe long, narrow and curved; with a brown sclerotised curved structure, bearing spines on edges.

FEMALE GENITALIA: Shape of inflated seminal depository as in Fig. 39. Ring sclerites (Fig. 36) large, oval, oriented slightly diagonally; anterior margin elevated considerably above dorsal labiate plate, and vertically convex; posterior margin sinuate (convex in middle). At anterior of ovipositor, below ventral labiate plate, with two heavily sclerotised claw-like structures (Fig. 41). Inter-ramal sclerites (Fig. 37) with a brown sclerotised, more or less flat, triangular area on each side, linked mid-posteriorly by an upright (not flat) strap-like curved structure (sigmoid process), attached underneath (Fig. 38). Ovipositor bulb anterior with two pointed dorsal projections (Fig. 42).

EGG: 1.90–1.99 x 0.40–0.51 mm (from dissection), slightly curved, a little wider before rounded pole, narrowed behind operculum area; operculum somewhat convex across top; with a curved spur (Fig. 40).

TYPE DATA: **Holotype** ♂ (7.29 x 3.10 mm) and **allotype** ♀, **WN**, Mangaone South Rd, nr Waikanae, on kahikatea, 30 Dec 1999, A.C. Eyles (MONZ). **Paratypes** (3♂ 3♀; MONZ, NZAC): same data as holotype.

DIAGNOSIS: Among the *Romna* species larger than 6 mm in length, *R. rubisura* is closest to *R. variegata* Eyles & Carvalho, 1988, but is distinguished from it by the four longitudinal brown pronotal stripes, and the shorter second and third antennal segments.

ETYMOLOGY: The species is named *rubisura*, from the Latin words *rubidus* = red and *sura* = leg, after its bright red-banded legs.

DISTRIBUTION: Known only from Waikanae, in the Wellington area.

BIOLOGY: Collected in numbers on kahikatea, *Dacrycarpus dacrydioides* (Podocarpaceae).

***Romna scotti* (White, 1878)**

Morna scotti White, 1878: 131.

Romna scotti (White): Carvalho, 1957: 89.

MATERIAL EXAMINED: 50 specimens: 1♀ **ND**, Mangamuka (6 km E of Opurehu R), on *Podocarpus cunninghami* [= *P. hallii*], 28 Dec 1992, Larivière & Larochelle (NZAC); 2♀ **AK**, Ramarama Motor Camp, on variegated privet in flower, 3 Dec 1999, A.C. Eyles (MONZ); 1♀ **HB**, Clifton, on kanuka, 6 Mar 2004, A.C. Eyles (MONZ); 1♂ **GB**, Otoko Scenic Reserve, 38°28'30" S, 177°38'40" E, on manuka in old pasture (regenerating bush), 7 Jan 1998 Larivière & Larochelle (NZAC); 2♀ + nymphs **WI**, Foxton, on *Muehlenbeckia australis*, 9 Dec 2000, A.C. Eyles (MONZ); 1♂ 1♀ **BR**, Murchison, on matai, 19 Jan 2001, A.C. Eyles (MONZ); 2♂ 2♀ **MC**, Banks Peninsula, Hinewai Reserve, on *Hoheria angustifolia*, 6 Dec 1998, A.C. Eyles (CMNZ); 2♂ 6♀ same data except on *Hoheria* sp. (CMNZ); 3♂ same data except on *Plagianthus regius* (CMNZ); 2♀ Christchurch Port Hills, Dry Bush, on *Plagianthus regius*, 1 Dec 1998, A.C. Eyles (MONZ); 2♂ 1♀ + nymph Avon Estuary, on *Plagianthus divaricatus*, 26 Jan 2001, A.C. Eyles (CMNZ); 1♀ **OL**, Mt Aspiring National Park, Kiwi Flat, on *Plagianthus regius*, 5 Mar 1993, M.-C. Larivière (NZAC); 8♂ 6♀ Snowdon Forest, Dunton Swamp (SE side), 45°15'07" S, 167°58'30" E, 400 m, on slightly elevated area in swamp, sweeping bog-

pine, Larivière & Larochelle (NZAC); 1♀ **DN**, Leith Saddle, on *Melicytus ramiflorus*, 15 Dec 1998, A.C. Eyles (OMNZ); 3♂ 2♀ Dunedin, Woodhaugh Gardens, on *Plagianthus regius*, 12 Dec 1998, A.C. Eyles (OMNZ).

BIOLOGY: All of the above specimens were collected on new host plants, this being additional information to that published in Eyles & Carvalho (1988), Eyles (1998), and Larivière & Larochelle (2004). The 12 new host plants belong to six plant families as follows: Malvaceae, *Hoheria angustifolia* Raoul (narrow-leaved lacebark), *Hoheria* sp., *Plagianthus divaricatus* J.R. Forst. & G. Forst. (saltmarsh ribbonwood), *Plagianthus regius* (Poiteau) Hochr. (ribbonwood); Myrtaceae, *Kunzea ericoides* (A. Rich.) Joy Thomps. (kanuka), *Leptospermum scoparium* J.R. Forst. & G. Forst. (manuka); Olaceae, *Ligustrum ovalifolium* Hassk. (privet); Podocarpaceae, *Halocarpus bidwillii* (Kirk) Quinn (bog pine), *Podocarpus hallii* Kirk (montane totara), *Prumnopitys taxifolia* (D. Don) de Laub. (matai); Polygonaceae, *Muehlenbeckia australis* (G. Forst.) Meissn. (pohuehue); and Violaceae, *Melicytus ramiflorus* J.R. Forst. & G. Forst. (mahoe).

REMARKS: *Romna scotti* varies not only in the mottled colour pattern (Eyles & Carvalho 1988), but also in wing length and, in particular, length of the membrane. This mirid has previously been collected on two other *Podocarpus* (*P. totara* and a hybrid; see Eyles 1998), but the single specimens recorded here on kanuka, manuka and mahoe may be examples of chance association.

***Romna variegata* Eyles & Carvalho, 1988**

(Fig. 5)

Romna variegata Eyles & Carvalho, 1988: 79.

The following is additional information to the original description. Femora brown. Ventral surface of abdomen, and parts of thorax, covered with tiny brown spots. Abdomen with a sublateral brown stripe.

MATERIAL EXAMINED: 5 specimens: 1 paratype ♂ **ND**, Lake Ohia [dry], ex manuka, 7 Dec 1944, B. Given (NZAC); 4♂ **NN**, Puponga, Farewell Spit Visitor Centre, on kanuka in flower, 31 Jan 2003, A.C. Eyles (MONZ).

BIOLOGY: The definite association with kanuka is a new host plant record. Single specimens were recorded on manuka, *Leptospermum scoparium*, and *Pittosporum tenuifolium* Sol. ex Gaertn. (Pittosporaceae) by Eyles & Carvalho (1988).

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